12GA6

Pentagrid Converter

7-PIN MINIATURE TYPE

For Automobile Radio Receivers Operating Directly from 6-Cell Storage Batteries

GENERAL DATA

Electrical:

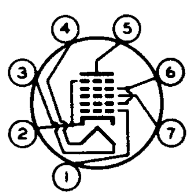
Heater, for Unipotential Cathode:
Voltage range (DC) . . . . 10 to 15.9 volts
For longest life, it is recommended that the heater be operated within the voltage range of 11 to 14 volts.
Current (Approx.) at 12.6 volts . . . . . . 0.15 amp
Direct Interelectrode Capacitances:

	Without External Shield	*With External Shield*▲	
Grid No.3 to all other electrodes (RF input)	8	8	μμf
Plate to all other electrodes (Mixer output) . . .	8	13	μμf
Grid No.1 to all other electrodes (Oscillator input) .	5	5	μμf
Grid No.3 to plate.	0.3 max.	0.25 max.	μμf
Grid No.3 to grid No.1.	0.15 max.	0.15 max.	μμf
Grid No.1 to plate.	0.1 max.	0.05 max.	μμf
Grid No.1 to cathode & grid No.5. .	2.5	2.5	μμf
Cathode & grid No.5 to all other electrodes except grid No.1 . .	15	20	μμf

Mechanical:

Operating Position. . . . . Any
Maximum Overall Length. . . . . 2-1/8"
Maximum Seated Length . . . . 1-7/8"
Length, Base Seat to Bulb Top (Excluding tip) . . 1-1/2" ± 3/32"
Diameter. . . . . 0.650" to 0.750"
Dimensional Outline . . . . See *General Section*
Bulb. T5-1/2
Base. . . . . . .Small-Button Miniature 7-Pin (JEDEC No.E7-1)
Basing Designation for BOTTOM VIEW. 7CH

Pin 1 - Grid No.1
Pin 2 - Cathode, Grid No.5
Pin 3 - Heater
Pin 4 - Heater



Pin 5 - Plate
Pin 6 - Grid No.2, Grid No.4
Pin 7 - Grid No.3

CONVERTER

Maximum Ratings, *Design-Maximum Values:*

PLATE VOLTAGE . . . . 16 max. volts

12GA6

GRID-No.3 (CONTROL-GRID) VOLTAGE:		
Negative-bias value	16 max.	volts
Positive-bias value	0 max.	volts
GRIDS-No.2 & No.4 (SCREEN-GRID) VOLTAGE	16 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	16 max.	volts
Heater positive with respect to cathode	16 max.	volts

Typical Operation and Characteristics:

With separate excitation[b] and with heater voltage of 12.6 volts

Plate Voltage	12.6	volts
Grids-No.2 & No.4 Voltage	12.6	volts
Grid-No.3 Supply Voltage	0	volts
Grid-No.3 Resistor (Bypassed)	2.2	megohms
RMS Grid-No.1 (Oscillator-Grid) Voltage	1.6	volts
Grid-No.1 Resistor	33000	ohms
Plate Resistance (Approx.)	1	megohm
Conversion Transconductance	140	μmhos
Grid-No.3 Voltage (Approx.) for conversion transconductance (μmhos) =		
5	-3	volts
20	-2.5	volts
Plate Current	0.3	ma
Grids-No.2 & No.4 Current	0.8	ma
Grid-No.1 Current	0.06	ma

Oscillator Characteristics (Not Oscillating):

With grids No.2 & No.4 connected to plate and with heater voltage of 12.6 volts

Plate and Grids-No.2 & No.4 Voltage	12.6	volts
Grid-No.3 Voltage	0	volts
Grid-No.1 Voltage	0	volts
Amplification Factor between grid No.1 and grids No.2 & No.4 connected to plate	9	
Transconductance between grid No.1 and grids No.2 & No.4 connected to plate	2400	μmhos
Cathode Current	3.6	ma
Grid-No.1 Voltage (Approx.) for plate μa = 10	-3.3	volts

Maximum Circuit Values:

Grid-No.3-Circuit Resistance	10 max.	megohms

[a] With external shield JEDEC No.316 connected to cathode & grid No.5.
[b] The characteristics shown with separate excitation correspond very closely with those obtained in a self-excited oscillator circuit operating with zero bias.